



04-13-04

1615

VPI/98-06DIV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner : Not Yet Assigned
Group : 1615
Applicants : Michael R. Hale et al.
Appln. No. : 10/600,937 Confirmation No.: 6239
Filed : June 20, 2003
For : SULFONAMIDE INHIBITORS OF ASPARTYL
PROTEASE

New York, New York
April 12, 2004

Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

TRANSMITTAL LETTER FOR
INFORMATION DISCLOSURE STATEMENT

Sir:

Transmitted herewith is an Information Disclosure
Statement in the above-identified application. This
Statement is submitted:

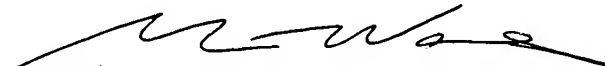
- ☐ [] within three months of the application filing
date;
- ☒ [x] more than three months from the application
filing date but before the mailing date of
the first Office Action on the merits.

In accordance with 37 C.F.R. §§ 1.97(b)(3),
submission of this Statement requires no fee. However, if
for any reason a fee is due, the Director is hereby



authorized to charge payment of any fees required in connection with this Information Disclosure Statement to Deposit Account No. 06-1075. A duplicate copy of this letter is transmitted herewith.

Respectfully submitted,


James F. Haley, Jr. (Reg. No. 27,794)
Min Wang (Reg. No. 51,303)
Attorneys for Applicants

c/o FISH & NEAVE
Customer No. 1473
1251 Avenue of the Americas
New York, New York 10020-1104
Tel.: (212) 596-9000



VPI/98-06DIV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner : Not Yet Assigned
Group : 1615
Applicants : Michael R. Hale et al.
Appln. No. : 10/600,937 Confirmation No.: 6239
Filed : June 20, 2003
For : SULFONAMIDE INHIBITORS OF ASPARTYL
PROTEASE

New York, New York
April 12, 2004

Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

STATEMENT UNDER 37 C.F.R. §§ 1.56 AND 1.97(b)

Sir:

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b),
applicants, through their representatives, make of record
the documents listed below. A completed Form PTO-1449
listing all of the documents is enclosed herewith.

United States Patents

| | | |
|-----------------|-----------|--------------------------|
| Mohrs et al. | 3,743,722 | issued July 3, 1973 |
| Descamps et al. | 4,330,542 | issued May 18, 1982 |
| Ryono et al. | 4,629,724 | issued December 16, 1986 |
| Martin et al. | 5,196,438 | issued March 23, 1993 |
| Kempf et al. | 5,354,866 | issued October 11, 1994 |
| Talley et al. | 5,622,949 | issued April 22, 1997 |
| Tung | 5,723,490 | issued March 3, 1998 |
| Vazquez et al. | 5,744,481 | issued April 28, 1998 |
| Vazquez et al. | 5,843,946 | issued December 1, 1998 |

European Patent Applications

| | |
|-----------|-----------------------------|
| 0 022 118 | published January 7, 1981 |
| 0 181 071 | published May 14, 1986 |
| 0 264 795 | published April 27, 1988 |
| 0 346 847 | published December 20, 1989 |
| 0 364 804 | published April 25, 1990 |
| 0 434 365 | published June 26, 1991 |
| 0 468 641 | published January 29, 1992 |
| 0 486 948 | published May 27, 1992 |
| 0 541 168 | published May 12, 1993 |
| 0 594 540 | published April 27, 1994 |

German Patent Application

| | |
|------------|------------------------|
| DE 3542567 | published June 5, 1986 |
|------------|------------------------|

Great Britain Patent Application

| | |
|-----------|-------------------------|
| 2,167,759 | published June 4, 1986 |
| 2,200,115 | published July 27, 1988 |

PCT International Patent Applications

| | |
|-------------|-----------------------------|
| WO 90/07329 | published July 12, 1990 |
| WO 91/00725 | published January 24, 1991 |
| WO 91/18866 | published December 12, 1991 |
| WO 92/08688 | published May 29, 1992 |
| WO 92/08698 | published May 29, 1992 |
| WO 92/08699 | published May 29, 1992 |
| WO 92/08700 | published May 29, 1992 |
| WO 92/08701 | published May 29, 1992 |
| WO 92/17176 | published October 15, 1992 |
| WO 93/23368 | published November 25, 1993 |
| WO 93/23388 | published November 25, 1993 |
| WO 93/23379 | published November 25, 1993 |
| WO 94/04491 | published March 3, 1994 |
| WO 94/04492 | published March 3, 1994 |
| WO 94/04493 | published March 3, 1994 |
| WO 94/05639 | published March 17, 1994 |
| WO 94/10134 | published May 11, 1994 |
| WO 94/10136 | published May 11, 1994 |
| WO 94/18192 | published August 18, 1994 |
| WO 94/19322 | published September 1, 1994 |

| | |
|-------------|-----------------------------|
| WO 95/06030 | published March 2, 1995 |
| WO 95/07269 | published March 16, 1995 |
| WO 95/09843 | published April 13, 1995 |
| WO 95/14016 | published May 26, 1995 |
| WO 95/32185 | published November 30, 1995 |
| WO 96/33184 | published October 24, 1996 |
| WO 96/33187 | published October 24, 1996 |
| WO 00/76961 | published December 21, 2000 |

Japanese Patent Abstracts

| | |
|-------------|--------------------------|
| JP 59-46252 | published March 15, 1984 |
| JP 59-48449 | published March 19, 1984 |
| JP 61-71830 | published April 12, 1986 |

Other Documents

Thompson et al, Ann. Reports Med. Chem., 36, pp. 247-257 (2001).

Polman et al, BMJ, 321, pp. 490-494 (2000).

Cohen et al, J. Neuroimmun., 98, pp. 29-36 (1999).

Menendez-Arias et al., "Moloney Murine Leukemia Virus Protease: Bacterial Expression and Characterization of the Purified Enzyme," Virology, 1996, pp. 557-563 (1993).

Berger et al., "Multiple-sclerosis-like Illness Occurring with Human Immunodeficiency Virus Infection," Neurology, 39, pp. 324-329 (1989).

Facchini et al., "Human Immunodeficiency Virus-1 Infection and Multiple Sclerosis-like Illness in a Child," Pediatr. Neurol., 26, pp. 231-235 (2002).

Banker et al., Modern Pharmaceutics, pp. 627-629 (1996).

R. Bone et al., "X-ray Crystal Structure of the HIV Protease Complex with L-700,417, an Inhibitor with Pseudo C₂ Symmetry", J. Am. Chem. Soc., 113, pp. 9382-84 (1991).

J.C. Craig et al., "Antiviral Synergy Between Inhibitors of HIV Proteinase and Reverse Transcriptase", Antiviral Chem. and Chemotherapy, 4(3), pp. 161-66 (1990).

- S. Crawford et al., "A Deletion Mutation in the 5' Part of the pol Gene of Moloney Murine Leukemia Virus Blocks Proteolytic Processing of the gag and pol Polyproteins", J. Virol., 53, pp. 899-907 (1985).
- M. Cushman et al., "Development of Methodology for the Synthesis of Stereochemically Pure Phe Ψ [CH₂N]Pro Linkages in HIV Protease Inhibitors", J. Org. Chem., 56, pp. 4161-67 (1991).
- D.S. Dhanoa et al., "The Synthesis of Potent Macrocyclic Renin Inhibitors", Tetrahedron Lett., 33, pp. 1725-28 (1992).
- G.B. Dreyer et al., "Hydroxyethylene Isostere Inhibitors of Human Immunodeficiency Virus-1 Protease: Structure-Activity Analysis Using Enzyme Kinetics, X-ray Crystallography, and Infected T-Cell Assays", Biochemistry, 31, pp. 6646-59 (1992).
- G.A. Flynn et al., "An Acyl-Iminium Ion Cyclization Route to a Novel Conformationally Restricted Dipeptide Mimic: Applications to Angiotensin-Converting Enzyme Inhibition", J. Am. Chem. Soc., 109, pp. 7914-15 (1989).
- G. Fontenot et al., "PCR Amplification of HIV-1 Proteinase Sequences Directly from Lab Isolates Allows Determination of Five Conserved Domains", Virology, 190, pp. 1-10 (1992).
- J. Freskos et al., "(Hydroxyethyl)sulfonamide HIV-1 Protease Inhibitors: Identification of the 2-Methylbenzoyl Moiety at P-2", Bio. & Med. Chem. Lett., 6, pp. 445-450 (1996).
- A. Ghosh et al., "Potent HIV Protease Inhibitors Incorporating High-Affinity P₂-Ligands and (R)-(Hydroxyethylamino)sulfonamide Isostere", Bio. & Med. Chem. Lett., 8, pp. 687-690 (1998).
- E.E. Gilbert, "Recent Developments in Preparative Sulfonation and Sulfation", Synthesis, 1969, pp. 3-10 (1969).
- A. Goldblum, "Modulation of the Affinity of Aspartic Proteases by the Mutated Residues in Active Site Models", FEBS, 261, pp. 241-44 (1990).

D. Grobelny et al., "Selective Phosphinate Transition-State Analogue Inhibitors of the Protease of Human Immunodeficiency Virus", Biochem. Biophys. Res. Commun., 169, pp. 1111-16 (1990).

G.D. Hartman et al., "4-Substituted Thiophene- and Furan-2-sulfonamides as Topical Carbonic Anhydrase Inhibitors", J. Med. Chem., 35, pp. 3822-31 (1992).

S. J. Hays et al., "Synthesis of cis-4-(Phosphonooxy)-2-piperidinecarboxylic Acid, an N-Methyl-D-aspartate Antagonist", J. Org. Chem., 56, pp. 4984-4086 (1991).

J.R. Huff, "HIV Protease: A Novel Chemotherapeutic Target for AIDS", Journal of Medicinal Chemistry, 34(8), pp. 2305-14 (1991).

K.Y. Hui et al., "A Rational Approach in the Search for Potent Inhibitors Against HIV Proteinase", FASEB, 5, pp. 2606-10 (1991).

Y. Kiso et al., "'O→N Intramolecular Acyl Migration'-type Prodrugs of Tripeptide Inhibitors of HIV Protease", Peptides: Chemistry, Structure and Biology, 61, pp. 157-159 (1996).

N.E. Kohl et al., "Active HIV Protease Is Required for Viral Infectivity", Proc. Natl. Acad. Sci. USA, 85, pp. 4686-90 (1988).

X. Lin et al., "Enzymic Activities of Two-Chain Pepsinogen, Two-Chain Pepsin, and the Amino-Terminal Lobe of Pepsinogen", J. Biol. Chem., 267(24), pp. 17257-63 (1992).

K.P. Manfredi et al., "Examination of HIV-1 Protease Secondary Structure Specificity Using Conformationally Constrained Inhibitors", J. Med. Chem., 34, pp. 3395-99 (1991).

G.R. Marshall, "Computer-Aided Drug Design", Ann. Ref. Pharmacol. Toxicol., 27, pp. 193-213 (1987).

J.A. Martin, "Recent Advances in the Design of HIV Proteinase Inhibitors", Antiviral Research, 17, pp. 265-78 (1992).

- T.D. Meek et al., "Inhibition of HIV-1 Protease in Infected T-Lymphocytes by Synthetic Peptide Analogues", Nature, 343, pp. 90-92 (1990).
- M. Miller et al., "Structure of Complex of Synthetic HIV-1 Protease with a Substrate-Based Inhibitor at 2.3 Å Resolution", Science, 246, pp. 1149-52 (1989).
- M. Miller et al., "Crystal Structure of a Retroviral Protease Proves Relationship to Aspartic Protease Family", Nature, 337, pp. 576-79 (1989).
- K.H.M. Murthy et al., "The Crystal Structures at 2.2-Å Resolution of Hydroxyethylene-Based Inhibitors Bound to Human Immunodeficiency Virus Type 1 Protease Show That the Inhibitors Are Present in Two Distinct Orientations", J. Biol. Chem., 267, pp. 22770-78 (1992).
- J.B. Nichols et al., "A Molecular Mechanics Valence Force Field for Sulfonamides Derived by ab initio Methods", J. Phys. Chem., 95, pp. 9803-11 (1991).
- J. Palca, "Shooting at a New HIV Target", Science, 247, p. 410 (1990).
- L.H. Pearl et al., "A Structural Model for the Retroviral Proteases", Nature, 329, pp. 329-51 (1987).
- J.W. Perich et al., "The Synthesis of Multiple O-Phosphoseryl-Containing Peptides via Phenyl Phosphate Protection", J. Org. Chem., 53, pp. 4103-4105 (1988).
- M.S. Plummer et al., "Design of Peptidomimetic Ligands for the pp60^{src} SH2 Domain", Bioorganic & Medicinal Chemistry, 5, pp. 41-47 (1997).
- M. Popvic et al., "Detection, Isolation, and Continuous Production of Cytopathic Retroviruses (HTLV-III) from Patients with AIDS and Pre-AIDS", Science, 224, pp. 497-500 (1984).
- M.D. Power et al., "Nucleotide Sequence of SRV-1, a Type D Simian Acquired Immune Deficiency Syndrome Retrovirus" Science, 231, pp. 1567-73 (1986).
- N.A. Roberts, "Rational Design of Peptide-Based HIV Proteinase Inhibitors", Science, 248, pp. 358-61 (1990).

S. Scharpe et al., "Proteases and Their Inhibitors: Today and Tomorrow", Biochimie, 73, pp. 121-26 (1991).

S.K. Sharma et al., "Could Angiotensin I Be Produced from a Renin Substrate by the HIV-1 Protease?", Anal. Biochem., 198, pp. 363-67 (1991).

S. Yamaguchi et al., "Synthesis of HIV Protease Dipeptide Inhibitors and Prodrugs", Peptide Chemistry 1996, pp. 297-300 (1997).

Copies of all the documents listed above were submitted by applicants in the parent United States Patent Application No. 09/731,129, now United States Patent 6,613,734; or were cited by the Examiner during prosecution of said parent application. Pursuant to 37 C.F.R. §1.98(d), applicants have not enclosed copies of the listed documents. However, applicants stand ready to provide copies at the Examiner's request.

Applicants respectfully request that the documents listed above be (1) fully considered by the Examiner during the course of examination of this application and (2) printed on any patent issuing from this application. Applicants also request that the Examiner forward a copy of the enclosed Form PTO-1449, duly



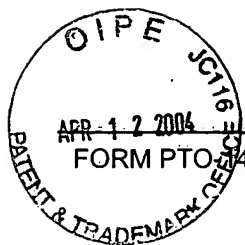
acknowledged and initialed by the Examiner, to the undersigned with the next Communication.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "James F. Haley, Jr.", written over a horizontal line.

James F. Haley, Jr. (Reg. No. 27,794)
Min Wang (Reg. No. 51,303)
Attorneys for Applicants

c/o FISH & NEAVE
Customer No. 1473
1251 Avenue of the Americas
New York, New York 10020-1104
Tel.: (212) 596-9000

APR 12 2004
FORM PTO 449U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.
VPI/98-06DIVSERIAL NO.
10/600,937INFORMATION DISCLOSURE
STATEMENT BY APPLICANTAPPLICANTS
Michael R. Hale, et al.

CONF. NO.: 6239

FILING DATE
June 20, 2003GROUP
1615

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL | DOCUMENT NUMBER | DATE | NAME | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|---------------------|--------------------|----------|-----------------|-------|----------|----------------------------------|
| | 3,743,722 | 7/3/73 | Mohrs et al. | 424 | 98 | |
| | 4,330,542 | 5/18/82 | Descamps et al. | 424 | 248.5 | |
| | 4,629,724 | 12/16/86 | Ryono et al. | 514 | 18 | |
| | 5,196,438 | 3/23/93 | Martin et al. | 514 | 311 | |
| | 5,354,866 | 10/11/94 | Kempf et al. | 546 | 265 | |
| | 5,622,949 | 4/22/97 | Talley et al. | 514 | 237.8 | |
| | 5,723,490 | 3/3/98 | Tung | 514 | 478 | |
| | 5,744,481 | 4/28/98 | Vazquez et al. | 514 | 311 | |
| | 5,843,946 | 12/1/98 | Vazquez et al. | 514 | 252.11 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

FOREIGN PATENT DOCUMENTS

| EXAMINER INITIAL | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
|---------------------|--------------------|----------|---------|-------|----------|-------------|----|
| | | | | | | YES | NO |
| | 0 022 118 | 1/7/81 | EP | | | | |
| | 0 181 071 | 5/14/86 | EP | | | | |
| | 0 264 795 | 4/27/88 | EP | | | | |
| | 0 346 847 | 12/20/89 | EP | | | | |
| | 0 364 804 | 4/25/90 | EP | | | | |
| | 0 434 365 | 6/26/91 | EP | | | | |
| | 0 468 641 | 1/29/92 | EP | | | | |
| | 0 486 948 | 5/27/92 | EP | | | | |
| | 0 541 168 | 5/12/93 | EP | | | | |
| | 0 594 540 | 4/27/94 | EP | | | | |
| | 3542567 | 6/5/86 | DE | | | | |

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not conformance and not considered. Include copy of this form with next communication to applicant.

EV132198497US

| | | | | | | | |
|--|--|--|--|---------------------------------------|--|--------------------------|--|
| FORM PTO-1449 | | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | | ATTY. DOCKET NO. VPI/98-06DIV | | SERIAL NO. 10/600,937 | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | | | | APPLICANTS Michael R. Hale, et al. | | CONF. NO.: 6239 | |
| | | | | FILING DATE June 20, 2003 | | GROUP 1615 | |

| | | | | | | | |
|--|------------|----------|-----|--|--|--|--|
| | 2,167,759 | 6/4/86 | GB | | | | |
| | 2,200,115 | 7/27/88 | GB | | | | |
| | WO90/07329 | 7/12/90 | PCT | | | | |
| | WO91/00725 | 1/24/91 | PCT | | | | |
| | WO91/18866 | 12/12/91 | PCT | | | | |
| | WO92/08688 | 5/29/92 | PCT | | | | |
| | WO92/08698 | 5/29/92 | PCT | | | | |
| | WO92/08699 | 5/29/92 | PCT | | | | |
| | WO92/08700 | 5/29/92 | PCT | | | | |
| | WO92/08701 | 5/29/92 | PCT | | | | |
| | WO92/17176 | 10/15/92 | PCT | | | | |
| | WO93/23368 | 11/25/93 | PCT | | | | |
| | WO93/23388 | 11/25/93 | PCT | | | | |
| | WO93/23379 | 11/25/93 | PCT | | | | |
| | WO94/04491 | 3/3/94 | PCT | | | | |
| | WO94/04492 | 3/3/94 | PCT | | | | |
| | WO94/04493 | 3/3/94 | PCT | | | | |
| | WO94/05639 | 3/17/94 | PCT | | | | |
| | WO94/10134 | 5/11/94 | PCT | | | | |
| | WO94/10136 | 5/11/94 | PCT | | | | |
| | WO94/18192 | 8/18/94 | PCT | | | | |
| | WO94/19322 | 9/1/94 | PCT | | | | |
| | WO95/06030 | 3/2/95 | PCT | | | | |
| | WO95/07269 | 3/16/95 | PCT | | | | |
| | WO95/09843 | 4/13/95 | PCT | | | | |
| | WO95/14016 | 5/26/95 | PCT | | | | |
| | WO95/32185 | 11/30/95 | PCT | | | | |
| | WO96/33184 | 10/24/96 | PCT | | | | |
| | WO96/33187 | 10/24/96 | PCT | | | | |
| | WO00/76961 | 12/21/00 | PCT | | | | |
| | 59-46252 | 3/15/84 | JP | | | | |
| | 59-48449 | 3/19/84 | JP | | | | |

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not conformance and not considered. Include copy of this form with next communication to applicant.

| | | | |
|--|--|---------------------------------------|--------------------------|
| FORM PTO-1449 | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTY. DOCKET NO. VPI/98-06DIV | SERIAL NO. 10/600,937 |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | | APPLICANTS Michael R. Hale, et al. | CONF. NO.: 6239 |
| | | FILING DATE June 20, 2003 | GROUP 1615 |
| 61-71830 | 4/12/86 | JP | |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

| EXAMINER INITIAL | |
|---------------------|---|
| | Thompson et al, Ann. Reports Med. Chem., 36, pp. 247-257 (2001). |
| | Polman et al, BMJ, 321, pp. 490-494 (2000). |
| | Cohen et al, J. Neuroimmun., 98, pp. 29-36 (1999). |
| | Menendez-Arias et al., "Moloney Murine Leukemia Virus Protease: Bacterial Expression and Characterization of the Purified Enzyme," Virology, 1996, pp. 557-563 (1993). |
| | Berger et al., "Multiple-sclerosis-like Illness Occurring with Human Immunodeficiency Virus Infection," Neurology, 39, pp. 324-329 (1989). |
| | Facchini et al., "Human Immunodeficiency Virus-1 Infection and Multiple Sclerosis-like Illness in a Child," Pediatr. Neurol., 26, pp. 231-235 (2002). |
| | Banker et al., Modern Pharmaceuticals, pp. 627-629 (1996). |
| | R. Bone et al., "X-ray Crystal Structure of the HIV Protease Complex with L-700,417, an Inhibitor with Pseudo C ₂ Symmetry", J. Am. Chem. Soc., 113, pp. 9382-84 (1991). |
| | J.C. Craig et al., "Antiviral Synergy Between Inhibitors of HIV Proteinase and Reverse Transcriptase", Antiviral Chem. and Chemotherapy, 4(3), pp. 161-66 (1990). |
| | S. Crawford et al., "A Deletion Mutation in the 5' Part of the pol Gene of Moloney Murine Leukemia Virus Blocks Proteolytic Processing of the gag and pol Polypeptides", J. Virol., 53, pp. 899-907 (1985). |
| | M. Cushman et al., "Development of Methodology for the Synthesis of Stereochemically Pure Pheψ[CH ₂ N]Pro Linkages in HIV Protease Inhibitors", J. Org. Chem., 56, pp. 4161-67 (1991). |
| | D.S. Dhanoa et al., "The Synthesis of Potent Macrocyclic Renin Inhibitors", Tetrahedron Lett., 33, pp. 1725-28 (1992). |
| | G.B. Dreyer et al., "Hydroxyethylene Isostere Inhibitors of Human Immunodeficiency Virus-1 Protease: Structure-Activity Analysis Using Enzyme Kinetics, X-ray Crystallography, and Infected T-Cell Assays", Biochemistry, 31, pp. 6646-59 (1992). |
| | G.A. Flynn et al., "An Acyl-Iminium Ion Cyclization Route to a Novel Conformationally Restricted Dipeptide Mimic: Applications to Angiotensin-Converting Enzyme Inhibition", J. Am. Chem. Soc., 109, pp. 7914-15 (1989). |
| | G. Fontenot et al., "PCR Amplification of HIV-1 Proteinase Sequences Directly from Lab Isolates Allows Determination of Five Conserved Domains", Virology, 190, pp. 1-10 (1992). |
| | J. Freskos et al., "(Hydroxyethyl)sulfonamide HIV-1 Protease Inhibitors: Identification of the 2-Methylbenzoyl Moiety at P-2", Bio. & Med. Chem. Lett., 6, pp. 445-450 (1996). |
| | A. Ghosh et al., "Potent HIV Protease Inhibitors Incorporating High-Affinity P ₂ -Ligands and (R)-(Hydroxyethylamino)sulfonamide Isostere", Bio. & Med. Chem. Lett., 8, pp. 687-690 (1998). |

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not conformance and not considered. Include copy of this form with next communication to applicant.

| | | | |
|--|--|---------------------------------------|--------------------------|
| FORM PTO-1449 | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTY. DOCKET NO. VPI/98-06DIV | SERIAL NO. 10/600,937 |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | | APPLICANTS Michael R. Hale, et al. | CONF. NO.: 6239 |
| | | FILING DATE June 20, 2003 | GROUP 1615 |

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

| EXAMINER INITIAL | |
|---------------------|---|
| | E.E. Gilbert, "Recent Developments in Preparative Sulfonation and Sulfation", <u>Synthesis</u> , 1969, pp. 3-10 (1969). |
| | A. Goldblum, "Modulation of the Affinity of Aspartic Proteases by the Mutated Residues in Active Site Models", <u>FEBS</u> , 261, pp. 241-44 (1990). |
| | D. Grobelny et al., "Selective Phosphinate Transition-State Analogue Inhibitors of the Protease of Human Immunodeficiency Virus", <u>Biochem. Biophys. Res. Commun.</u> , 169, pp. 1111-16 (1990). |
| | G.D. Hartman et al., "4-Substituted Thiophene- and Furan-2-sulfonamides as Topical Carbonic Anhydrase Inhibitors", <u>J. Med. Chem.</u> , 35, pp. 3822-31 (1992). |
| | S. J. Hays et al., "Synthesis of cis-4-(Phosphonooxy)-2-piperidinecarboxylic Acid, an N-Methyl-D-aspartate Antagonist", <u>J. Org. Chem.</u> , 56, pp. 4984-4086 (1991). |
| | J.R. Huff, "HIV Protease: A Novel Chemotherapeutic Target for AIDS", <u>Journal of Medicinal Chemistry</u> , 34(8), pp. 2305-14 (1991). |
| | K.Y. Hui et al., "A Rational Approach in the Search for Potent Inhibitors Against HIV Proteinase", <u>FASEB</u> , 5, pp. 2606-10 (1991). |
| | Y. Kisó et al., "O→N Intramolecular Acyl Migration'-type Prodrugs of Tripeptide Inhibitors of HIV Protease", <u>Peptides: Chemistry, Structure and Biology</u> , 61, pp. 157-159 (1996). |
| | N.E. Kohl et al., "Active HIV Protease Is Required for Viral Infectivity", <u>Proc. Natl. Acad. Sci. USA</u> , 85, pp. 4686-90 (1988). |
| | X. Lin et al., "Enzymic Activities of Two-Chain Pepsinogen, Two-Chain Pepsin, and the Amino-Terminal Lobe of Pepsinogen", <u>J. Biol. Chem.</u> , 267(24), pp. 17257-63 (1992). |
| | K.P. Manfredi et al., "Examination of HIV-1 Protease Secondary Structure Specificity Using Conformationally Constrained Inhibitors", <u>J. Med. Chem.</u> , 34, pp. 3395-99 (1991). |
| | G.R. Marshall, "Computer-Aided Drug Design", <u>Ann. Ref. Pharmacol. Toxicol.</u> , 27, pp. 193-213 (1987). |
| | J.A. Martin, "Recent Advances in the Design of HIV Proteinase Inhibitors", <u>Antiviral Research</u> , 17, pp. 265-78 (1992). |
| | T.D. Meek et al., "Inhibition of HIV-1 Protease in Infected T-Lymphocytes by Synthetic Peptide Analogues", <u>Nature</u> , 343, pp. 90-92 (1990). |
| | M. Miller et al., "Structure of Complex of Synthetic HIV-1 Protease with a Substrate-Based Inhibitor at 2.3 Å Resolution", <u>Science</u> , 246, pp. 1149-52 (1989). |
| | M. Miller et al., "Crystal Structure of a Retroviral Protease Proves Relationship to Aspartic Protease Family", <u>Nature</u> , 337, pp. 576-79 (1989). |
| | K.H.M. Murthy et al., "The Crystal Structures at 2.2-Å Resolution of Hydroxyethylene-Based Inhibitors Bound to Human Immunodeficiency Virus Type 1 Protease Show That the Inhibitors Are Present in Two Distinct Orientations", <u>J. Biol. Chem.</u> , 267, pp. 22770-78 (1992). |

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not conformance and not considered. Include copy of this form with next communication to applicant.

[illegible]

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not conformance and not considered. Include copy of this form with next communication to applicant.



Attorney Docket No. VPI/98-06DIV

Applicants : Michael R. Hale, et al.
Application No. : 10/600,937 Confirmation No.: 6239
Filed : June 20, 2003
For : SULFONAMIDE INHIBITORS OF ASPARTYL
PROTEASE
Group Art Unit : 1615
Examiner : Not yet assigned

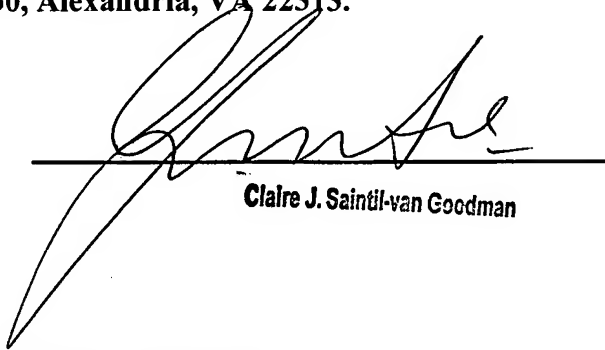
New York, New York 10020
April 12, 2004

Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

“Express Mail” mailing label number EV132198497US

Date of Deposit April 12, 2004

I hereby certify that this paper/fee is being deposited with the United States Postal Service “EXPRESS MAIL POST OFFICE TO ADDRESSEE” service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Hon. Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313.



Claire J. Saintil-van Goodman

Encl:

- Transmittal Letter (in duplicate);
- Statement Under 37 C.F.R. §§ 1.56 and 1.97(b) (in duplicate);
- Form PTO-1449 (in duplicate)